

VARSHAVSKY, O. G.

SOT/30-39-1-48/57

20(1) ATTACH

ATTACH

Title: Development of the Theory and the Application of Modern Automatic Systems (Radioelektronika priemnykh i priborostroenii sistem)

Author: Vsevolod Andreevich SOKOL'NIKOV, pp 136-139 (USA)

PERIODICAL

The conference dealing with this problem took place in Moscow from September 22 to 26, 1958 and was opened by V. A. Tropinin, chairman of the National Party Konflikt, USSR Po armamentschekh upravlyeniya (National Committee of the USSR for Antennas Control). In the Plenary Meeting the Technical Committee of the National Committee of the USSR for Antennas Control reported on discrete automatic systems and their development progress. The work of the conference was undertaken by 5 sections. Reports were held by J. P. Sartakovskiy and V. F. Perov reported new investigation results in the case of mobile systems with variable parameters in his report with his successful presentation.

Ya. D. Tropinin also spoke in his report with his successful presentation about the problems of mobile systems with several elements. He also spoke about the problem of an increase of the perturbation stability of the systems.

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Ya. D. Tropinin investigated the possibilities of pulse systems, particularly, investigated one of the possible ways of constructing an automatic control system with a discrete cur-

renting device.

E. A. Krutin analyzed pulse systems.

A. N. Moshkov investigated the conditions of signal oscillations (resonance) in a system with a wide range pulse modulation. He also spoke on the method of determining parameters of a transducer system for an antenna system.

P. V. Kuznetsov also spoke on the methods of approximation of the characteristics of oscillating systems.

I. G. Zhdanov spoke on the methods of determining perturbations.

O. G. Kostylev spoke on the methods of determining the characteristics of control systems.

O. G. Zarubin spoke about the construction of an automatic system for objects with retardation which permits the best possible control systems.

M. A. Goryainov analyzed modern telecommunication equipment from the viewpoint of the application of definite automatic machines (construction of systems of a finite number of elements).

P. P. Pecherskiy reported on the effects and construction of a general purpose digital machine for the analysis of relay devices.

This machine is intended for the analysis of automatic telephone exchanges and other similar systems.

Yu. V. Kostylev spoke on the methods of calculating the influence of the environment on the reliability of electronic equipment.

O. K. Arzhnikov and Yu. V. Kostylev reported on the principles of reliability of electronic equipment with the help of elements described above, and also by means of which further development of the theory can be made.

The participants in the conference can be found in the attached list.

At the end of the papers presented to them mentioned in the last section, the heads of the sections summarized the results obtained at the conference and briefly mentioned the importance taken in further developing the theory and the application of discrete automatic systems.

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Card 2/3

S/119/60/000/008/002/008
B019/B056

AUTHOR: Varshavskiy, O. G., Engineer

TITLE: A Quick-operation Controller for Delay Systems

PERIODICAL: Priborostroyeniye, 1960, No. 8, pp. 4-6

TEXT: The author proceeds from the block diagram of an automatic control system, a final control organ, and the object to be controlled, which is shown in Fig. 1, and develops the block diagram of a quick-operation controller shown in Fig. 3. Hereby he obtains function (2) from the transfer function (1) of the automatic control system for the signal of a system without delay. If not too great demands are made on accuracy, this non-linear function may be replaced by the linear function (4). For a delay system, function (2) is approximated with (6), and from this function, formulas (7) and (8) are obtained for calculating the shift of the control organ. Fig. 2 shows two block diagrams which are suited for obtaining the shift signals of the final control organ. By substituting functions (7) and (8) as well as the transfer functions of the circuit diagrams shown in Fig. 2 into equation (6), function (11)

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A Quick-operation Controller for Delay Systems

S/119/60/000/008/002/008
B019/B056

is obtained for the signal of a delay system. From (11) it may be seen that it is necessary for realizing a quick-operation controller to signalize the deviation of the quantity to be controlled from a given value, the derivative of the deviation with respect to time, and the feedback connected to the output of the relay element. These conditions are satisfied by the block diagram of a quick-operation controller shown in Fig. 3. This diagram was checked on an electronic simulator. Fig. 4 shows the transients and curves of the change in the regulating effect in the case of disturbances, which were obtained from this electronic simulator. There are 4 figures and 6 Soviet references.

✓

Card 2/2

16-8000

S/194/61/000/002/021/039
D216/D302

AUTHOR: Varshavskiy, O.G.

TITLE: Optimum control of a second order system with delay

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika,
no. 2, 1961, 35, abstract 2 V270 (V sb. Teoriya i
primeneniye diskretn. avtomat. sistem, M., AN SSSR,
1960, 36-44)

TEXT: A transfer line in the phase plane is determined to obtain
an optimum transient state for an automatic control system of the
second order with delay. The design circuits of optimum automatic
control system are given together with that of an approximate op-
timum controller, in which circuit the evaluation of approximate
values is carried out using RC-networks. 3 references.

✓ B

Card 1/1

WPA - HAWAII

PHASE I BOOK EXPLOITATION

SOV/4411

Konferentsiya po voprosam teorii i primeneniya diskretnykh avtomaticheskikh sistem,
Moscow, 1958

Teoriya i primeneniye diskretnykh avtomaticheskikh sistem; trudy konferentsii
(Theory and Application of Discrete Automatic Systems; Transactions of the
Conference) Moscow, AN SSSR, 1960. 572 p. 5,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Natsional'nyy komitet SSSR po avtomati-
cheskomu upravleniyu. Institut avtomatiki i telemekhaniki.

Editorial Board: M.A. Gavrilov, Doctor of Technical Sciences, Yu.V. Dolgolenko,
Doctor of Technical Sciences, V.A. Kotel'nikov, Candidate of Technical Sciences,
A.Ya. Lerner, Doctor of Technical Sciences, I.S. Morosanov (Scientific Secretary),
G.S. Pospelov, Doctor of Technical Sciences, A.A. Fel'dbaum, Doctor of Technical
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Doctor of Technical Sciences; Resp. Ed.: Ya.Z. Tsypkin, Doctor of Technical
Sciences; Ed. of Publishing House: M.L. Podgoyetskiy; Tech. Ed.: S.G. Markovich.

PURPOSE: These transactions are intended for the members of the conference and
other specialists in automatic control.

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Theory and Application of Discrete Automatic Systems (Cont.)

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COVERAGE: The Conference on the Problems of Theory and Application of Discrete Automatic Systems took place in Moscow from September 22 to 26, 1958. It was the first conference devoted to discussions of the present status of the theory and techniques of discrete automatic systems and to planning for future development. The papers discussed at the conference have been divided into four groups. In the first group optimization switching circuits are discussed as well as methods of relay control systems, in particular plant lag control systems in which are realized optimal processes as to quick response. The second group of papers is devoted to the analysis and synthesis of pulse systems with variable parameters, of pulse systems with several pulse components, to the study of self-oscillation phenomena in nonlinear pulse systems, and to the methods of calculating linear pulse systems. Problems of simulating pulse systems and descriptions of some pulse regulators have also been included. The third group of papers deals with digital systems. Problems of using elements of digital technique and digital computers for the automation of various fields of engineering, i.e., power engineering, mining, radio communication, metallurgy, etc., are discussed. Problems of analog-digital conversion and vice versa as well as problems of developing specialized functional converters have been included in this group. The fourth group of papers includes theoretical elements and certain practical applications of the simplest types of self-adjusting systems, optimizing control systems, which are developed as relay, pulse and digital devices. Here are also found

Theory and Application of Discrete Automatic Systems (Cont.) SOV/4411

papers describing various methods of investigating steady state conditions in optimizing systems, results of studying the effects of random factors on the process of automatic scanning, and examples of existing optimizing control systems. Some of the more interesting communications and observations made during the discussion of the various conference papers have also been included in the Transactions. Personalities and references accompany most of the papers.

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Tsyplkin, Ya.Z. (Moscow). Discrete Automatic Systems. Theoretical Problems and Prospects of Development	5
The author describes characteristic features and potentialities of optimizing systems. There are 11 references: 2 Soviet and 9 English.	
I. OPTIMALIZING RELAY SYSTEMS	
Butkovskiy, A.G., and S.M. Domanitskiy (Moscow). Synthesis of the Controlling Part of Optimizing Systems For Certain Items With Lag	27
The authors discuss some cases of synthesis of the controlling element of regulating systems optimizing as to quick operation in which the perma-	
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Theory and Application of Discrete Automatic Systems (Cont.)

SOV/4411

ment part consists of a delay section and two integrating sections connected in series. They formulate and solve some problems for such systems. There are 6 references, all Soviet.

Varshavskiy, O.G. (Moscow). Optimalizing Control of a System of the Second Order With a Lag

36

The author studies the problem of developing a regulator which would accomplish optimalizing control of technological processes under large disturbances when limitations of some control system coordinates exert a decisive influence. A block diagram of a linear simulation of the controlled processes is presented in the form of a series connection of three sections; integrating, aperiodical, and lag. The author derives equations for such a system. There are 3 references, all Soviet.

Nadzhafova, G.A. (Moscow). Limit Dynamic Indexes of Standard Objects Controlled by an Astatic Servomechanism With Limited Speed and Limited Motion of the Regulating Device

45

In studying the problem the author uses the method of isochrones and develops equations for isochrones in the cases of astatic object and astatic servomotor, as well as static object and astatic servomotor. She also investigates cases of the absence and presence of lags, presence of one and two

Card 4/21

LERNER, Aleksandr Yakovlevich. Prinimal uchastiye VARSHAVSKIY, O.G., inzh.;
PASTERNAK, Ye.B., red.; VORONIN, K.P., tekhn. red.

[Principles of the construction of high-speed servomechanisms and
controllers] Printsipy postroeniia bystrodeistvuiushchikh sle-
diashchikh sistem i regulatorov. Moskva, Gos. energ. izd-vo, 1961.
151 p. (Biblioteka po avtomatike, no.25) (MIRA 15:1)
(Automatic control) (Servomechanisms)

VASILYEVSKY, O.G.

The VTI regulators as optimum controllers. Priborostroenie
no.11:2-5 N '61.
(Electric controllers)

L 63603-65 ENT(d)/ENT(v)/ENT(k)/ENT(h)/ENT(l) PG-4/Pg-4/Pr-4/Po-4/Pk-4/PI-4 IJP(c)
ACCESSION NR: AP5016981 UR/0280/65/000/003/0181/0186

AUTHOR: Varshavskiy, O. G. (Moscow)

TITLE: A method for the synthesis of automatic relay control devices with high dynamic characteristics

SOURCE: AN SSSR. Izvestiya. Tekhnicheskaya kibernetika, no. 3, 1965, 181-186

TOPIC TAGS: relay control device, high response relay, control system design, delay containing control system, automatic control system 6

ABSTRACT: During the automation of dynamically simple objects, one can easily realize optimum control devices. Consequently, it is necessary to study the synthesis of systems close to the optimum ones. The present author investigates the synthesis of automatic regulators with excellent dynamic properties based on the correction of the linear portion of the system, thus bringing it close to second-order systems. A system is considered dynamically excellent if, during its response to stepwise interactions at the regulator input (and zero initial conditions), the regulation process consists of two intervals, in each of which the control interaction is found to be at the limiting level. The length of the intervals is chosen, for instance, in such a way that the transient

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ACCESSION NR: AP5016981

process duration becomes a minimum. The regulator utilizes a nonlinear transformation of the signal due to the derivative of the controlled quantity (or its equivalent) which is independent of the dynamic properties of the given part of the system. Among the special topics under discussion is the synthesis of regulators for the control of delay-containing systems. Orig. art. has: 30 formulas and 3 figures.

ASSOCIATION: none

SUBMITTED: 25Apr64

ENCL: 0C

SUB CODE: IE

NO REF Sov: 007

OTHER: C00

Card

llc
2/2

MAKOVSKIY, Vitaliy Anatol'yevich; CHISTYAKOV, S.F.; kand. tekhn. nauk, dots., retsenzent; VASIL'EVSKIY, G.G.; kand. tekhn. nauk; red.; GINZBURG, V.M.; red.

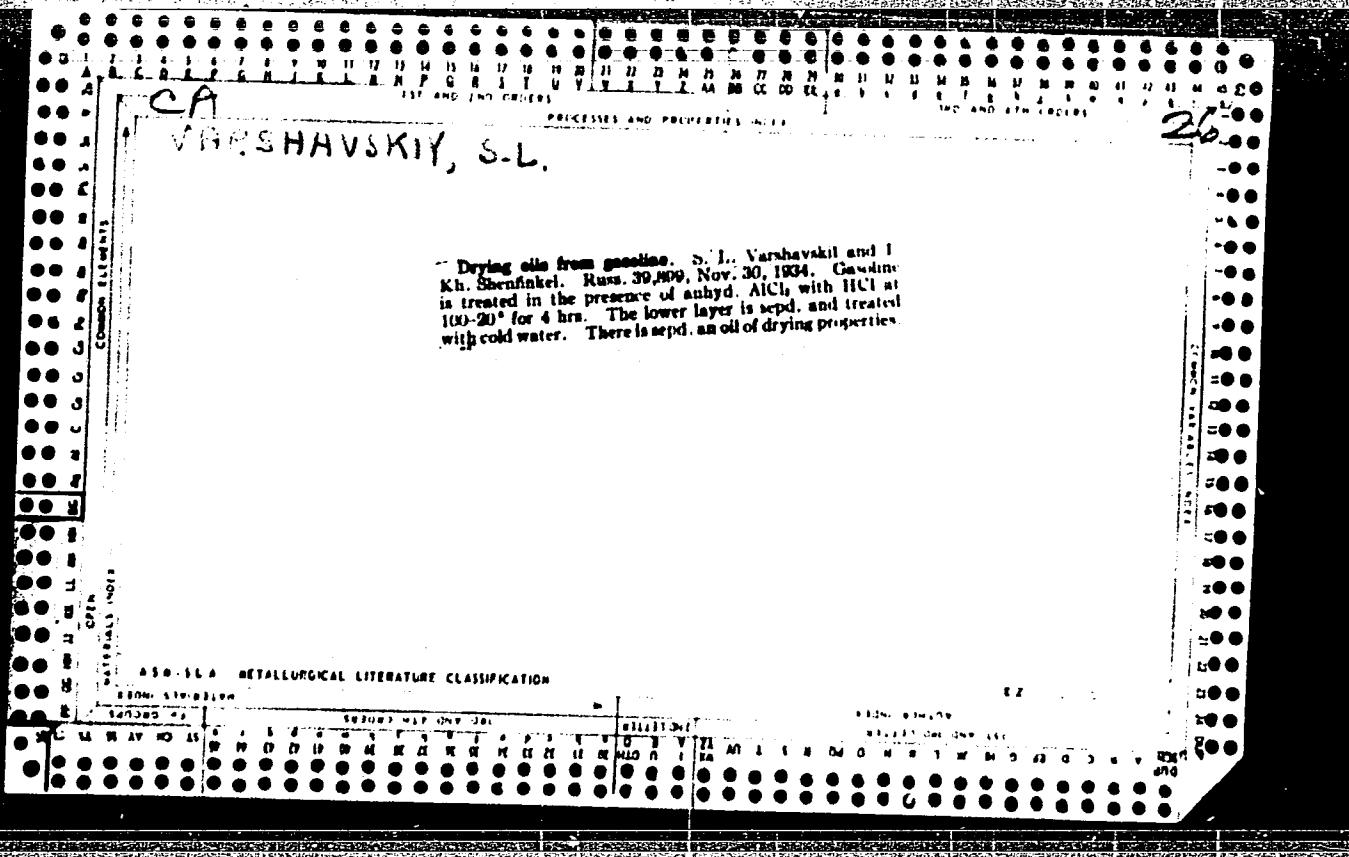
[Control and automatic regulation of industrial processes in ferrous metallurgy] Kontrol' i avtomaticheskoe reguli-rovaniye prizvedstvennykh protsessov v chernoi metallicheskii sbornik zadach. Moskva, MetalLurgiya, 1965. 382 p.

(Mil. 18.8)

UZIYENKO, A.M., inzh.; TKACHENKO, I.A., inzh.; MARSHAVSKIY, P., inzh.;
RABINOVICH, Ye.I., kand.tekhn.nauk; ZAYAKIN, B.I., inzh.;
ZARZHITSKAYA, N.G., inzh.

Improving the structure of the head part in rimmed steel ingots
(with summary in English). Stal' 18 no.10:899-905 O '58.

1. Magnitogorskiy metallurgicheskiy kombinat.
(Steel ingots) (Steel--Metallurgy) (MIRA 11:11)



"APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5

MEDVED', T.YA., KABACHNIK, M.I., MOSHKIN, P.A., VARSHAVSKY, S.L.
KOFMAN, L.P., GEFTER, YE.L., TKACHEVSKY, G.V., DANILEVICH, A.A.

Industrial method of synthesis of di-B,B chlor-ethyl of vinyl-phosphinic acid from ethylene oxide and phosphorus trichloride.

Report submitted for the 12th Conference on high molecular weight compounds
devoted to monomers, Baku, 3-7 April 62

APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5"

"APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5

VARSHAVSKIY, S.I.; TOMILOV, A.P.

Joint hydrodimerization of acetone and mesityl oxide. Zhur.
VKHO 5 no. 5:597-598 '60. (MIRA 13:12)
(Acetone) (Mesityl oxide)

APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5"

MEL'NIKOV, N.N.; VARSHAVSKIY, S.L.; SHVETSOVA-SHILOVSKAYA, K.D.; ANDRIANOVA,
L.V.; BOCHAROVA, L.P.; KOFMAN, L.P.

Phosphamido, a highly effective insecticide. Khim. prom. no.10:
17-20 O '61. (MIRA 15:2)
(Insecticides)

MEL'NIKOV, N.N.; KUKALENKO, S.S.; VARSHAVSKIY, S.L.; KOFMAN, L.P.;
BELOV, M.D.

Prospective herbicides. Khim. prom. no.10:39-40 0 '61.

(Herbicides)

(MIRA 15:2)

TOMILOV, A.P.; KAABAK, L.V.; VARSHAVSKIY, S.L.

Electrochemical reduction of nitriles. Khim.prom.
no.9:562-566 Ag '62. (MIRA 15:9)
(Nitriles)
(Reduction, Electrolytic)

VARSHAVSKIY, S. L.; TOMILOV, A. P.; SMIRNOV, Yu. D.

Electrochemical method for preparing trialkyl phosphates. Zhur.
VKHO 7 no. 5: 598-599 '62. (MIRA 15:10)

(Phosphoric acid) (Electrochemistry)

L 22655-65 EPF(c)/EWP(j)/EWI(m)/T Pe-4/PR-4 RU/blk
ACCESSION NR: AT5002135 S/0000/64/000/000/0260/0263

b7c
b7e

AUTHOR: Gordon, G. Ya.; Varshavskiy, S. L.; Kofman, L. P.

TITLE: Preparation of pentaerythritol allylidenediacetal and its derivatives for the synthesis of new types of polyethers

SOURCE: AN SSSR. Institut neftekhimicheskogo sinteza. Sintez i svoystva monomerov (The synthesis and properties of monomers). Moscow, Izd-vo Nauka, 1964. 260-263

TOPIC TAGS: pentaerythritol derivative, acetal synthesis, unsaturated acetal, polyether synthesis, acrolein, thermosetting resin

ABSTRACT: The author studied the synthesis of pentaerythritol allylidenediacetal by published routes and some modified methods of purification, as well as the curing of its semicondensation product with pentaerythritol. Pentaerythritol was reacted with a large excess of acrolein with a phosphoric acid catalyst to give a 19% yield of pentaerythritol allylidenediacetal, and with an oxalic acid catalyst at 1:2.5 mole ratio of pentaerythritol to acrolein to give a 31.8% yield of pentaerythritol allylidenediacetal (based on pentaerythritol), after recrystallization from ethanol. Reacting a mixture (pentaerythritol with 1-2% moles of commercial acrolein) with the presence of sulfuric acid at pH 2-3 and 60°C, with removal of water, led to products in various

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ACCESSION NR: AT5002135

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vaporization, gave a semicondensation product of pentaerythritol-pentaerythritol allylidenediacetal with optimal properties. The yield of semicondensation product was 98% based on pentaerythritol. thermosetting of the product containing 0.2% toluenesulfonic acid at 160°C for 2 hrs. gave a tridimensional resin formed with very slight shrinkage. It has good solubility in methanol, ethanol, acetone, and ethyl acetate. The rheological properties of the semicondensation product and the thermal and mechanical properties of the resins were studied. "The authors thank N. M. Osokina for determining the physico-mechanical properties of the polymer" Orig. art. has: 4 formulas and 1 table.

ASSOCIATION: None

SUBMITTED: 30Jul64

|
ENCL: 00

SUB CODE: OC, GC

NO REF SOV: 000

OTHER: 004

Card

2/2

L 52603-65 ENT(m)/EPF(c)/MIG(n)/ZWP(j)/T
ACCESSION NR: AP5015860

Pc-4/Ir-1
UR/0063/64/009/006/0700/0701

AUTHOR: Kaabak, L. V.; Tomilov, A. P.; Varshavskiy, S. L.

TITLE: Electrochemical synthesis of organoselenium and organotellurium compounds and their chemical properties

SOURCE: Vsesoyuznoye khimicheskoye obshchestvo. Zhurnal, v. 9, no. 6, 1964, 700-701

TOPIC TAGS: organoselenium compound, organotellurium compound, organic synthetic process, electrochemistry

Abstract: The possibility of the electroreduction of selenium to hydrogen selenide on a graphite cathode in alkaline medium ($\text{pH} \geq 10$) in alkaline medium was demonstrated. The method can be used for purposes of synthesis. An electrochemical method was developed for synthesizing previously undescribed di-(beta-cyanoethyl) selenide and di-(beta-cyanoethyl) telluride. These compounds, prepared electrochemically, proved extremely reactive, and a series of derivatives were synthesized from them: di-(beta-cyanoethyl) selenodibromide, di-(beta-carboxyethyl)

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ACCESSION NR: AP5015860

selenide, ethyl-di-(beta-cyanoethyl) tellurium iodide, di-(beta-cyanoethyl) tellurodibromide, and di-(beta-carboxyethyl) telluride, which had not been described earlier in the literature.

ASSOCIATION: none

SUBMITTED: 28Nov63

ENCL: 00

SUB CODE: OC, GC

NO REF SOV: OOL

OTHER: 002

JPRS

Card 2/2

KAABAK, L.V.; TOMILOV,A.P.; VARSHAVSKIY, S.L.

Electroreduction of unsaturated nitriles. Part 4: Electro-
reduction of 1-cyano-1, 3-butadiene. Zhur. ob. khim. 34 no.7:
2107-2111 Jl '64 (MJRA 17:8)

SOURCE: Byulleten' izobreteniy i tevarnykh znakov, no. 3, 1965, 20

from glyceraldehyde. In order to increase the glycerine yield, the electrolytic reduction is carried out in a diaphragm electrolyzer in the presence of iron salts on a lead cathode. The current density is 200 a/m², temperature 10-30°C, and catholyte pH 4-7.

ASSOCIATION: none

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"APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5

TOMILOV, A.P.; VARSHAVSKIY, S.L.; KULIKOV, M.T.; SMIRNOV, Yu.D.

Electrochemical synthesis of hexamethylendiamine and amino
capronitrile. Khim. prom. 41 no.5:329-333 My '65.

(MIRA 18:6)

APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5"

"APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5

TOMILOV, A.P.; SERGO, A.A.; VARSHAVSKIY, S.L.

Electroreduction of glyceraldehyde to glycerol and hexite.
Elektrokhimiia 1 no.9:1126-1129 S '65. (MIRA 18:10)

APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5"

ACC NR: AP6030551 (A, A') DJ/RM

SOURCE CODE: UR/0413/66/000/016/0031/0031

INVENTOR: Sanin, P. I.; Shepeleva, Ye. S.; Borodach, M. S.; Myannik, A. G.; Vazhavelyi, S. L.; Petyakina, Ye. I.; Vinogradova, I. E.

ORG: none

TITLE: Preparative method for bis(trichloroalkyl) esters of alkylphosphonic acids. Class 12, No. 184244 (announced by the Institute of Petrochemical Synthesis, AN SSSR (Institut neftekhimicheskogo sinteza, AN SSSR))

SOURCE: Izobreteniya, promyshlennyye obraztsy, tsvetnyye znaki, no. 16, 1966, 31

TOPIC TAGS: lubricant additive, mineral oil, alkylphosphonic acid

ABSTRACT: An Author Certificate has been issued for a preparative method for bis(trichloroalkyl) esters of alkylphosphonic acid of the general formula RP(O)[C(CH₂)_nCCl₃]₂ where R is an alkyl group and n = 1, 4, 6, 8. To obtain such esters suitable as additives to mineral oil, alkylphosphonic dichlorides are treated with trichloroalkyl alcohols in the presence of an organic base, e.g., pyridine. [SM]

SUB CODE: 07, 11/ SUBM DATE: 05May65/ ATD PRES: 5472

Card 1/1 fw

UDC: 547.76'113.07

ACC NR: AP6030549

SOURCE CODE: UR/0413/66/000/016/0030/0030

INVENTOR: Bliznyuk, N. K.; Kolomiyets, A. P.; Golubeva, R. N.; Varshavskiy, S. L.; Gladstejn, B. M.; Zimin, V. M.

ORG: none

TITLE: Preparation of aryl esters of N-(β -chloroethyl)taurine. Class 12, No. 184840
[announced by All-Union Scientific Research Institute of Phytopathology (Vsesoyuznyy nauchno-issledovatel'skiy institut fitopatologii)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 16, 1966, 30

TOPIC TAGS: fungicide, ~~β -chloroethyltaurine preparation~~, hydroxyethyltaurine, thionyl chloride, phosphorus pentachloride, ester, hydroxide, ethylene

ABSTRACT: To obtain aryl esters of N-(β -chloroethyl)taurine with fungicidal properties, esters of β -hydroxyethyltaurine are treated with thionyl chloride or phosphorus pentachloride in an organic solvent (e.g., chloroform) at boiling temperature of the solvent. The excess of the initial reagents and HCl formed are removed from the reaction mixture; the residue is dissolved in an organic solvent, e.g., an ether, then mixed with alcoholic solution of an acid, and evaporated.

SUB CODE: 07/ SUBM DATE: 26Jul65/

[WA-50; CBE No. 11]

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UDC: 547.436'26'122.07

ACC NR: AP6030565

SOURCE CODE: UR/0413/66/000/016/0034/0034

INVENTOR: Bliznyuk, N. K.; Kolomyets, A. F.; Strel'tsov, R. V.; Varshavskiy, S. L.

ORG: none

TITLE: Preparation of β -mercaptoethyl esters of carboxylic acids. Class 12,
No. 184862 [announced by the All-Union Scientific Research Institute of
Phytopathology (Vsesoyuznyy nauchno-issledovatel'skiy institut fitopatologii)]

SOURCE: Izobreteniya, promyshlennye obraztsy, tovarnyye znaki, no. 16, 1966, 34

TOPIC TAGS: mercaptoethyl carboxylate, alkyl mercaptoethyl carboxylate, aryl
mercaptoethyl carboxylate, ~~heteroatom-alkyl mercaptoethyl carboxylate~~, ester,
mercaptan, carboxylic acid

ABSTRACT:

To increase the yield of β -mercaptoethyl esters of carboxylic acids ($\text{RCOOCH}_2\text{CH}_2\text{SH}$, where R is an alkyl, haloalkyl, or aryloxyalkyl) from β -mercaptoethanol and the acids, the reaction is conducted with azeotropic removal of water in the presence of a catalyst, e.g., strong inorganic acids or phosphorus trichloride.

SUB CODE: 07/ SUBM DATE: 13Jul65

[WA-50; CBE No. 11]

Card 1/1

UDC: 547.29'262:122.07

SOURCE CODE: UR/0413/66/000/014/0023/0023

INVENTOR: Bliznyuk, N. K.; Kolomiyets, A. F.; Strel'tsov, R. V.; Kvasha, Z. N.; Varshavskiy, S. L.; Libman, B. Ya.

ORG: none

TITLE: Preparation of O-alkyl-S(β -acyloxy)ethyl thiophosphinates. Class 12, No. 183745. [announced by All-Union Scientific Research Institute of Phytopathology (Vsesoyuznyy nauchno-issledovatel'skiy institut fitopatologii)]

SOURCE: Izobret prom'obraz tov zn, no. 14, 1966, 23

TOPIC TAGS: ~~alkyl mercaptoethyl thiophosphinate synthesis~~, mercaptoethyl ester, carboxylic acid, phosphinic acid dichloride, ORGANIC PHOSPHORUS COMPOUND, PHOSPHONIC ACID, ESTER

ABSTRACT: In the proposed method, O-alkyl S(β -acyloxy)ethyl thiophosphonates of the general formula:
(where R and R' are alkyl, substituted alkyl, substituted aryl, or aryl; R" is lower alkyl) are obtained by the reaction of β -mercaptoproethyl carboxylates with a phosphonic ester chloride or with a mixture of phosphonic acid dichloride and an alcohol in organic solvents in the presence of HCl acceptors, e.g., tertiary amines. Orig. art. has:
[WA-50; CBE No. 11]

SUB CODE: 07/ SUBM DATE: 28Jul65/
Card 1/1

UDC: 547.26'118.07

ACC NR: AF7012442

SOURCE CODE: UR'0413/66 000'018'0041'0041

AUTHOR: Gordon, G. Ya.; Varshavskiy, S. L.; Kofman, L. P.; Zhakov, V. A.;
Belykh, R. P.; Kalitina, M. I.

ORG: none

TITLE: Method for preparing mixed complete esters of pentaerythrite with
methylphosphonic and methacrylic acids. Class 12, No. 185918

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 18, 1966,
41

TOPIC TAGS: methacrylic acid, pentaerythritol, ester, methylphosphonic acid

SUB CODE: 07

ABSTRACT: A method is claimed for the preparation of mixed complete
esters of pentaerythrite with methylphosphonic and methacrylic acids. In
this method the methacrylic acid is subjected to reaction with the dioxy-
ester of pentaerythrite and methylphosphonic acid at 138-140°C in an
organic solvent such as xylene and in the presence of monovalent or dival-
ent copper compounds or acidic compounds, such as orthophosphoric acid or
mixtures thereof. [JPRS: 40,422]

Card 1/1

UDC: 547.438.1'427.1'11.07

6833 1704

ACC NR: AP6035682 (A,N) SOURCE CODE: UR/0413/66/000/019/0030/0030

INVENTOR: Bliznyuk, N. K.; Kvasha, Z. N.; Varshavskiy, S. L.; Libman, B. Ya.

ORG: none

TITLE: Preparation of esters of trithiophosphonic acids. Class 12, No. 186464 [Announced by All-Union Scientific Research Institute of Phytopathology (Vsesoyuznyy nauchno-issledovatel'skiy institut fitopatologii)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 19, 1966, 30

TOPIC TAGS: phosphinic acid, phosphonic acid, ester, mercaptan, tertiary amine, and catalysts

ABSTRACT: To increase the yield in the preparation of esters of trithiophosphonic acids by the reaction of alkyl(aryl)thiophosphinic acid dichlorides with mercaptans, the reaction is conducted in the presence of amine salts of polythiophosphoric or polythiophosphonic acids as catalyst. The catalysts are formed during the reaction when tertiary amines and phosphorus sulfides are added to the initial reaction mixture.

SUB CODE: 07 / SUBM DATE: 15Sep65

[WA-50; CBE No. 14]
[PS]

Card 1/1

UDC: 547.26'118.07

ACC NR: AP6030568

SOURCE CODE: UR/0413/66/000/016/0035/0035

INVENTOR: Bliznyuk, N. K.; Kolomyets, A. F.; Strel'tsov, R. V.; Varshavskiy, S. L.; Libman, B. Ya.; Protasova, L. D.

ORG: none

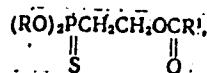
TITLE: Preparation of O,O-dialkyl S-(β -acyloxy)ethyl thiophosphates. Class 12, No. 184865. [announced by the All-Union Scientific Research Institute of Phytopathology (Vsesoyuznyy nauchno-issledovatel'skiy institut fitopatologii)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 16, 1966, 35

TOPIC TAGS: pesticide, dialkylacyloxyethyl thiophosphate, PHOSPHATE

ABSTRACT:

To obtain O,O-dialkyl S-(β -acyloxy)ethyl thiophosphates of the general formula:



(where R is a lower alkyl, R' is an alkyl, substituted alkyl, aryl, or substituted aryl), dialkyl chlorophosphates are treated with β -mercaptoethyl carboxylates in the presence of HCl acceptors, e.g.,

SUB CODE: 07 / SUBM DATE: 28Jul65 [WA-50; CBE No. 11]
Card 1/1

UDC: 547.419.1.07

VARSHAVSKIY, S.M.; SHILOV, M.N.

Dry varihervaceous valleys in the northern part of the Aral region,
landscape features and ecological characteristics of the valleys
and their intrazonal significance in the desert zone [with summary
in English]. Biul.MOIP.Otd.biol. 63 no.3:41-55 My-Je '58.

(ARAL SEA REGION--BIOTIC COMMUNITIES)

(MIRA 12:3)

42203. VARSHAVSKIY, S. N., ERYLOVA, K. T. - Osnovnyye printsiipy opredeleniya vozrasta myshev-dnykh gryzunov. I. Myshi-Murina. Materialy k poznaniyu fauny: flory SSSR, izd, Mosk. o-vom ispytateley prirody, Novaya seriya. Otd. zool., vyp. 3, 1943, c 179-90. - Bibliogr. 30 nazv.

SO: Letopis' Zhurnal'nykh Statey, Vol. 47. 1948

VARSHAVSKIY, S.N.; KRYLOVA, K.T.

Underlying principles of establishing the age of murine rodents.
Mat. k pozn. fauny i flory SSSR. Otd. zool. no.17:179-190 '48.
(Mice) (Teeth) (MIRA 11:3)

PA 54/4781

USSR/Medicine - Mice
Medicine - Zoology

Jul/Aug 49

"Composition of the House Mice (Mus Musculus L.) Population According to Age," S. N. Varshavskiy, 12 pp

"Zool Zhur" Vol XXVIII, No 4

Made an extensive study of the mice population according to age. Tables and graphs show death rate and composition of population according to age in steppe regions and populated areas.

54/49781

VARSHAVSKIY, S.N.; SHILOV, M.N.

Effect of agricultural activity on the territorial distribution and
settling of the large desert mouse (*Rhabdomys opimus* Licht). Dokl. AN
SSSR 93 no.5:903-906 D '53.
(MLRA 6:12)

1. Predstavлено академиком Я. Н. Павловским.

(Field mice)

"APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5

VARSHAVSKIY, S.N.; SHILOV, M.N.

Practical use of automobiles in counting large desert mouse
(*Rhomomys opimus* Light.) populations. Binl. MOIP. Otd. biol.
59 no.3:37-48 My-Je '54. (MLRA 7:7)
(Gerbils)

APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5"

VARSHAVSKIY, S.N.; SHILOV, M.N.

Biological principles and methodology of predicting changes in the population of gerbils (*Rhombomys opimus* Lich.) in the desert zone of the northern Aral Sea region. Trudy prob. i tem.sov. no.5:12-22 '55. (MIRA 8:12)

1. Aralomorskaya protivochumnaya stantsiya
(Aral Sea region--Gerbils)

VARSHAVSKIY, S.N.; SHILOV, M.N.

Method of calculating gerbil colonies from a car and some results
of its use. Trudy probl. i tem.sov. no.5:23-24 '55. (MLRA 8:12)

1. Aralomorskaya protivochumnaya stantsiya
(Gerbils)

VARSHAVSKIY, S.N.; SHILOV, N.M.

New data on the distribution of some mammals, chiefly rodents, in
the northern Aral Sea region and neighboring areas. Biul. MOIP. Otd.
Biol. 60 no.5:43-58 S-0 '55. (MIRA 9;4)

(ARAL SEA REGION--MAMMALS)

VARSHAVSKIY, S.N.

▲ case of nutcracker migration to Ust-Urt. Biul.MOIP. Otd.biol.
61 no.4:84 J1-Ag '56. (MLRA 10:8)
(UST-URT--CROWS)

YARSHAVSKIY, S. N.

"Certain ecological causes of the epizootic significance of the little marmot in the desert zone." p. 232

Dosyatoye Soveshchanije po parazitologicheskim problemam i prirodnym zabolевanijam. 22-29 Oktyabrya 1959 g. (Tenth Conference on Parasitological Problems and Diseases with Natural Factors 22-29 October 1959), Leningrad-Leninograd, 1959, Academy of Medical Sciences of USSR and Academy of Sciences of U.S.S.R., No. 1 254pp.

Aralomorskaya Antiplague Station

"APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5

MARSHAVSKIY, S.N.

Geographical variability of mounds of the lesser suslik and its
relation to the age of colonies and the migration history of the
species. Biul. MOIP. Otd. biol. 65 no.5:134-135 S-O '60.

(MIRA 13:12)

(SUSLIKS)

(ANIMALS, HABITATIONS OF)

APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5"

"APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5

VARSHAVSKIY, S.N.; ROTSHIL'D, Ye.V.

Effect of the burrowing activity of susliks on the desert vegetation.
Biul. MOIP. Otd. biol. 65 no.5:138-139 S-0 '60. (MIRA 13:12)
(ARAL SEA REGION—SUSLIKS) (DESERT ECOLOGY)

APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5"

KRYLOVA, K.T.; VARSHAVSKIY, S.N.; SHILOVA, Ye.S.; SHILOV, M.N.; PODLESSKIY, G.I.;
KOMARDINA, M.G.

Characteristics of interspecific contact in colonies of the greater
gerbil (*Rhombomys opimus* Licht.) in the northern part of the Aral
Sea region. Zool. zhur. 40 no.3:434-446 Mr '61. (MIRA 14:3)

1. Aral Sea Anti-Plague Station and Aral Branch of the Moscow
Society of Naturalists.
(Aral Sea Region—Gerbils as carriers of disease)

VARSHAVSKIY, S.N.

Characteristics of feeding habits of the black kite in the
Aktyubinsk steppes. Ornitologija no.6:210-215 '63.
(MIRA 17:6)

VARSHAVSKIY, S.N.

Some characteristics of the ecology and biocenotic relations
of the kite Milvus koreschun Gm. with susliks in steppe areas.
Zool. zhur. 42 no.11:1679-1685 '63. (MIRA 17:2)

1. All-Union Research Institute "Microb", Saratov, and Aral
Branch of Moscow Society of Naturalists, Aralsk.

"APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5

VARSHAVSKIY, S.N.; SHILOV, M.N.; DUBYANSKIY, M.A.; YEREMITSKAYA, N.A.;
YEREMITSKIY, N.Ya; VOLODKIN, A.V.

Brief news. Biul. MOIP. Otd. biol. 68 no.4:152-158 Jl-Ag '63.
(MIRA 16:10)

APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5"

VARSHAVSKIY, S.N.

Age of the colonies of lesser susliks in different landscape zones as related to the distribution and history of the range of the species. Biul. MOIP. Otd. biol. 68 no.5:3-14 S-0 '63.
(MIRA 16:10)

VARSHAVSKIY, S.N.; GARBUZOV, V.K.

Landscape characteristics of the habitat and the former southern boundary of the distribution of bobac in the Aktyubinsk-Mugodzhar steppes. Zool. zhur. 43 no.2:253-261 '64. (MIRA 17:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut "Mikrob", Saratov i Aral'skoye otdeleniye Moskovskogo obshchestva ispytateley prirody.

VESNINSKIY, S.N.

Distribution biotope and nesting characteristics of the black kite
Milvus korschun L., under steppe conditions. Biol. MOIP. Oti. 69 no.
5:30-39 8-0 '64. (MIRA 17:11)

VARSHAVSKIY, S.R.

"A hundred thousand li before the most" by IA.M. Svet. Reviewed
by S.R. Varshavskii. Priroda 50 no. 3:121-122 Mr '61.
(MIRA 14:2)

1. Deystvitel'nyy chlen Geograficheskogo obshchestva SSSR,
Moskva.

(Voyages and travels)
(Svet, IA.M.)

VARSHAVSKIY, S.T.

Calculus hydronephrosis of a single functioning right kidney,
complicated by duodeno-intestino-renal fistula. Khirurgiiia no.9:68
S '53. (MLRA 6:11)

1. Iz urologicheskoy kliniki Tashkentskogo instituta usovershenstvova-
niya vrachey. (Kidney--Diseases) (Fistula)

VARSHAVSKIY, S.T.

Urethrovenous reflux and its significance in the clinical aspects
of urethral stenosis. Urologia, 22 no.1:12-17 Ja-F '57
(MLRA 10:5)

1. Iz urologicheskogo otdeleniya (konsul'tant-professor E.A. Frakman)
bol'nitsy No.6 Tashkenta (glavnyy vrach S.I. Kislyy)
(URETHRA, stenosis
urethro-venous reflux in clin. aspects)

VARSHAVSKIY, S.T.; AVAKIMOVA, L.A., red.; TSAY, A.A., tekhn. red.

[Urethrovenous reflux and its clinical significance] Urethro-
venoznyi refluks i ego klinicheskoe znachenie. Tashkent,
Medgiz UzSSR, 1963. 125 p. (MIRA 17:3)

KOYSMAN, A.A. ; VARSHAVSKIY, S.T., ZMOYRD, I.D.

Hospital hygiene in urological clinics. Antibiotiki No.2:176-
178 F '65. (MIRA 18:5)

2. Urologicheskaya klinika Tashkentskogo Instituta usovremenestvo-
vaniya vrachey i urologicheskoye otdeleniye gorodskoy klinicheskoy
bol'nitsy №.15.

VARSHAVSKIY, T.P.; AGAPOV, B.G.; MUSTAFIN, F.A.; PERMYAKOV, V.A.

Reducing the escape of gas during the charging of coke ovens.
Koks i khim.no.2:26-30 '56. (MLRA 9:7)

1.Vostochnyy uglekhimicheskly institut (for Agapov).2.N.-Tagil'skiy
keksekhimicheskly zaved.
(Coke ovens)

LIPPLAVK, I.L., kandidat tekhnicheskikh nauk; VARSHAVSKIY, T.P., kandidat tekhnicheskikh nauk; CHERKASOV, N.Kh.

Investigating the settling process of foams in tar in connection with steam injection. Koks i khim.no.6:37-42 '56. (MLRA 9:10)

- 1.Vestchnyy uglokhimicheskiy institut (for Liplavk and Varshavskiy).
- 2.N.-Tagil'skiy koksokhimicheskiy zaved (for Cherkasov).
(Tar--Analysis)

ПАСТВОВАНИЕ, 1956.

LAZOVSKIY, I.M.; VARSHAVSKIY, T.P.; NEPOMNYASHCHIY, I.L.; GERASIMOVA, L.S.

Comments on the article of R.Z.Lerner "Changing the coking unit layout for a considerable increase in the number of ovens per battery." Koks i khim.no.7:28-31 '56. (MLRA 9:12)

1. Vostochnyy uglekhimicheskiy institut (for Lazovskiy and Varshavskiy). 2. Konstruktorskoye byuro Glavmashmeta Ministerstva chernoy metallurgii (for Nepomnyashchiy). 3. Glavkoks Ministerstva chernoy metallurgii SSSR (for Gerasimova).
(Coke ovens) (Lerner, R.Z.)

AUTHORS: Varshavskiy, T.P., Kogan, L.A., Levin, E.D. and Shevchenko, N.S. SOV/68-58-8-6/28

TITLE: An Apparatus for the Determination of the Concentration of Dust in Coke Oven Gas (Ustanovka po opredeleniyu kontsentratsii pyli v koksovom gaze)

PERIODICAL: Koks i Khimiya, 1958, Nr 8, pp 18 - 21 (USSR)

ABSTRACT: A modification of the usual apparatus for the determination of dust in gases adapted for measuring the dust content in the gas in ascension pipes during charging of coke ovens is described and illustrated (Figures 1 and 2). The main features: sampling tube from heat-resistant steel, and the filler from glass wool enclosed between metallic screens of 0.5 mm mesh. A good reproducibility of the results is claimed (table).

There are 2 figures and 1 table.

ASSOCIATION: Magnitogorskiy metallurgicheskiy kombinat
(Magnitogorsk Metallurgical Combine); VUKHIN

Card 1/1 1. Coal--Processing 2. Coal gas--Impurities 3. Coal gas
 --Testing equipment

SOV/68-59..6-7/25

AUTHORS: Varshavskiy, T.P., Dorogobid, G.M., Seppar, A.M. and Shevchenko, N.S.

TITLE: Smokeless Charging of Coke Ovens (Bezdymnaya zagruzka koksovykh pechey)

PERIODICAL: Koks i Khimiya, 1959, Nr 6, pp 24-31 (USSR)

ABSTRACT: In 1955 VUKhIN developed a method of smokeless charging of coke ovens with two collecting mains. The basic deficiency of the method was a decrease in the weight of the charge and an increase in the ash content of tar due to carry over of the coal dust during steam injection. In 1957-58 VUKhIN in co-operation with the Magnitogorsk Metallurgical Combine investigated various methods of charging ovens in order to improve the technology of charging. The main attention was directed towards decreasing the amount of dust carried over into the collecting mains. The characteristic features of the methods tested are shown in Table 1 and the dependence of concentration of dust in the gas in ascension pipes on the moisture content and the content of particles below 50 μ in the blend in Fig 1. The best results were obtained when charging was carried out in two stages:

Smokeless Charging of Coke Ovens

SOV/68-59-6-7/25

first through two outside holes simultaneously or in turn charging 12.9 tons (without levelling) and then after 15 ~ 25 minutes, through the middle hole (3.3 t) and levelling. Under these conditions the carry over of dust into the collecting mains was the lowest (9.85 .. 11.8 kg/oven). The method can be used at a moisture content up to 7.5% and with the injection of steam according to the VUKhIN-MMK scheme (Fig 6). The use of vibrating filter screens for the removal of suspended matter from tar was tested with satisfactory results (no details) and will be incorporated into the operation practice on the MMK plant. Continuation of the work on the smokeless charging of coal blends with a moisture content above 7.5%

Card 2/2

is recommended.

There are 6 figures, 5 tables .

ASSOCIATION:

Magnitogorskiy Metallurgicheskiy Kombinat
(Magnitogorsk Metallurgical Combine) (Dzerzhinsk,
Seppar and Cherevchenko); and VAIIN (Verkhnechely).

VARSHAVSKIY, T.P., kand.tekhn.nauk; BEZDVERNYY, G.N.; RAKOV, V.V.;
RASKIN, V.Z.; NIKITIN, Yu.K.

Coal charge for the production of other than blast-furnace coke.
Koks i khim. no.11:18-20 '62. (MIRA 15:12)

1. Vostochnyy uglekhimicheskiy institut (for Varshavskiy,
Bezdvernyy). 2. Kuznetskiy metallurgicheskiy kombinat (for
Rakov, Raskin). 3. Kuznetskiy filial Vostochnogo uglekhimi-
cheskogo instituta (for Nikitin).
(Coke)

"APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5

VARSHAVSKIY, V. G.

"Meeting With the Customers," *Vest. Svyazi*, No.11, pp 23, 1953

Translation No. 420, 22 Jun 55

APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5"

VARSHAVSKIY, V. I. (Leningrad)

"Mathematical Theory of Neuron Network."

report presented at the 3rd Conference on the use of Mathematics in Biology,
Leningrad University, 23-28 Jan 1961.

(Primeneniye matematicheskikh Metodov v Biologii. II, Leningrad, 1963, pp.5-11

(Moscow Agricultural Academy imeni Timiryazev)

"APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5

VARSHAVSKIY, V. I. and SEMEKOVA, T.N.

"Learning Program for Identification of Configurations."

Report submitted for the Symposium on Principles in the Design of
Self-Learning Systems, Kiev Ukr SSR, 5-9 May 1961

APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5"

27254
S/020/61/139/005/004/021
B104/B201

16.8000

AUTHOR: Varshavskiy, V. I.

TITLE: Functional possibilities and synthesis of threshold elements

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 139, no. 5, 1961, 1071-1074

TEXT: Threshold elements are defined as being such, whose behavior in discrete schemes can be described by $y = \text{sign}(\sum_{j=0}^{n-1} \xi_j x_j - \eta)$ (1). Here, y is a dyadic variable characterizing the state of the output element; x_j is a dyadic variable characterizing the state of the j -th input; ξ_j and

η are integers. $\text{sign } z = \begin{cases} 0, & z < 0 \\ 1, & z \geq 0 \end{cases}$. If, now, the state of each element input corresponds to a coordinate of an n -dimensional space, the set of all possible input influences will be represented as a set S^n of the corners of an n -dimensional unit hypercube. Expression (1) then defines

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27254
S/020/61/139/005/004/021
B104/B201

Functional possibilities and synthesis ...

a closed semispace, and equation $\sum_{j=0}^{n-1} j x_j - \eta = 0$ (3) serves to define a hyperplane containing the corners of the hypercube that correspond to such input influences as cause a disturbance of an output element. Thus, the problem of determining the functional possibilities of threshold elements leads to the problem of determining the properties of subsets S^n , T , and F , such that $T \cap F = \emptyset$, $T \cup F = S^n$. In addition, there must be a hyperplane to separate these subsets. The author then gives two lemmas and eight theorems. In general, $t = (t_0, \dots, t_{n-1}) \in T$; $f = (f_0, \dots, f_{n-1}) \in F$;

$\sum_{j=0}^{n-1} j t_j - \eta \geq 0$; $\sum_{j=0}^{n-1} j f_j - \eta < 0$. Lemma 1: Set T has the following properties: if a vector $t = (t_0, \dots, t_{j-1}, 0, t_{j+1}, \dots, t_{n-1}) \in T$, then also $t = (t_0, \dots, t_{j-1}, 1, t_{j+1}, \dots, t_{n-1}) \in T$. Lemma 2: Set F has the

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S/020/61/139/005/004/021
Functional possibilities and synthesis ... B104/B201

following properties : if a vector $f = (f_0, \dots, f_{j-1}, 1, f_{j+1}, \dots, f_{n-1}) \in F$, then also $f = (f_0, \dots, f_{j-1}, 0, f_{j+1}, \dots, f_{n-1}) \in F$. Theorem 1: A logical function which is given by the set T of vectors is monotonic. Theorem 2: Set T is a star with the corners $(1, 1, \dots, 1, 1)$. It can be easily shown that set F is a star with the corners $(0, 0, \dots, 0, 0)$. [Abstracter's Note: Due to an obvious printing error the original text reads "set T".] By the reference set T_0 of set T one understands the set of all corners lying on the maximum diagonals of the subcubes. F_0 is defined analogously. Theorem 3: The necessary and sufficient condition for the existence of a hyperplane separating set F from set T, is the existence of a hyperplane separating sets F_0 and T_0 . Theorem 4: If a star corresponding to the logical function $g(x_0, x_1, \dots, x_{n-1})$ is separable, then also such star will be separable as corresponds to the function $\varphi(x_0, \dots, x_{n-1}, x_n, \dots, x_{m-1}) = x_n V \dots V x_{m-1} V g(x_0, \dots, x_{n-1})$, where $\varphi = \eta_g$ and $\xi_k = \eta_g$ (for all k from n to m-1). Theorem 5: If a star is separable that corresponds to the logical

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S/020/61/139/005/004/021

Functional possibilities and synthesis ... B104/B201

function $g(x_0, x_1, \dots, x_{n-1})$, then also such star is separable as corresponds to the function $\varphi(x_0, \dots, x_{n-1}, x_n, \dots, x_{m-1}) = x_n \wedge \dots \wedge x_{m-1} \wedge g$ (x_0, \dots, x_{n-1}), where $\xi_k = \sum_{j=0}^{n-1} f_j \eta_j + \eta_g = \eta_g + (m-n)\xi_k$ (for all k from n to $m-1$). The class of sets under investigation can be considerably restricted by the last two theorems. Theorem 6: If $\xi_k = \xi_{\min}$, there will be no vector $f \in (F \cap F_0)$ adjoining a vector $t \in T_0$ with respect to direction k . Theorem 7 (the inverse of theorem 6): If all vectors $f \in F$ adjoining the vectors $t \in T_0$ belong to F_0 , the relation $\xi_k = \xi_{\min}$ will be valid. Theorem 8: If all vectors $f' \in F'_1$, adjoining vectors $t' \in T'_0$ with respect to direction 1, belong to F'_1 , and the direction coefficients c_1 are equal to ξ_{\min} , then $\xi_1 \geq 1 + c_1 \xi_{\min}$. An example is finally given. There are 2 tables and 4 references: 1 Soviet and 3 non-Soviet. The references to English-language publications read as follows: S. Muroga, ICIP UNESCO (1959); M. C. Paull, E. I. McCluskey, Proc.IRE, 48, no. 7, (1960).

Card 4/5

Functional possibilities and synthesis ...

27254
S/020/61/139/005/004/021
B104/B201

ASSOCIATION: Leningradskoye otdeleniye Matematicheskogo instituta im.
V. A. Steklova Akademii nauk SSSR
(Leningrad Department of the Institute of Mathematics imeni
V. A. Steklov, Academy of Sciences USSR)

PRESENTED: March 31, 1961, by P. S. Novikov, Academician

SUBMITTED: March 25, 1961

X

Card 5/5

28642 S/020/61/139/006/007/0²²
B104/B209

16,8000 16,6700
AUTHOR: Varshavskiy, V. I.

TITLE: The complexity of dual systems consisting of threshold elements

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 139, no.6, 1961, 1325-1328

TEXT: A dual circuit which represents a definite logical function of n variables consists of k input threshold elements with not more than n inputs each, and of one output threshold element with k inputs, which are the outputs of the input threshold elements. Each threshold element can

be described by an expression $y_1 = \text{sign}(\sum_{j=0}^{n-1} f_{1j} x_j - y_1)$ ($1=0, 1, 2, \dots, k-1$).

The output threshold element is described by $z = \text{sign}(\sum_{i=0}^{k-1} y_i - \gamma)$. The

logical function is assumed to be given by the set T of corners of a unit hypercube at which the function becomes unity, and by the set F of roots

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28642 8/020/61/139/006/007/022
B104/B209

The complexity of dual...

of the function. $t = (t_0, t_1, \dots, t_{n-1}) \in T$ and $f = (f_0, f_1, \dots, f_{n-1}) \in F$

are two vectors for which

$$\begin{aligned} \text{sign} \left[\sum_{i=0}^{k-1} v_i \text{sign} \left(\sum_{j=0}^{n-1} \xi_{ij} t_j - \eta_i \right) - \tilde{\eta} \right] &= 1, \\ \text{sign} \left[\sum_{i=0}^{k-1} v_i \text{sign} \left(\sum_{j=0}^{n-1} \xi_{ij} f_j - \eta_i \right) - \tilde{\eta} \right] &= 0. \end{aligned} \quad (3)$$

holds good. Considering that the coordinates and the coefficients are integer one obtains

$$\begin{aligned} \sum_{i=0}^{k-1} v_i \text{sign} \left(\sum_{j=0}^{n-1} \xi_{ij} t_j - \eta_i \right) - \tilde{\eta} &\geq 0, \\ - \sum_{i=0}^{k-1} v_i \text{sign} \left(\sum_{j=0}^{n-1} \xi_{ij} f_j - \eta_i \right) + \tilde{\eta} &\geq 1. \end{aligned} \quad (4)$$

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The solution to this system with respect to $\nu_1, \xi_{1j}, \eta_1, \tilde{\eta}_1$,

k ($l = 0, 1, 2, \dots, k-1$; $j = 0, 1, 2, \dots, n-1$) is the complete description of a dual circuit. Particular interest is paid to the estimation of the above quantity k . The j -th formation with respect to the corner I in an n -dimensional unit hypercube is understood to be that set of all corner which differ from I in j coordinates (I is the number of the i -th corner). Each of the corners is its own zero formation. The corner T is in the n -th formation of the i -th corner. The following theorem is established: For arbitrary T and F , the system (4) has solutions when $k \leq n$ (an arbitrary logical function of n variables is verified by a dual circuit which consists of not more than $(n+1)$ threshold elements). This theorem is proved for four cases: (1) The function $\varphi(x_0, x_1, \dots, x_{n-1})$ be given by the set T which consists of 2^{n-1} isolated vectors t . (2) The function $\varphi(x_0, x_1, \dots, x_{n-1})$ be given by a set T consisting of $m \leq 2^{n-1}$ vectors t . (3) The function $\varphi(x_0, x_1, \dots, x_{n-1})$ is given by the

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The complexity of dual...

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set T consisting of $m > 2^{n-1}$ vectors t. (4) The function
 $\varphi(x_0, x_1, \dots, x_{n-1})$ is given by the set T which consists of 2^{n-1} not
isolated vectors t. There is 1 table and 1 Soviet reference.

ASSOCIATION: Leningradskoye otdeleniye matematicheskogo instituta im.
V. A. Steklova Akademii nauk SSSR (Leningrad Department
of the Mathematics Institute imeni V. A. Steklov of the
Academy of Sciences USSR)

PRESENTED: March 31, 1961, by P. S. Novikov , Academician

SUBMITTED: March 25, 1961

Card 4/4

VARSHAVSKIY, V. I.

"Stochastic automata with variable structure"

report submitted for the Intl. Symposium on Relay Systems and Finite Automata Theory
(IFAC), Moscow, 24 Sep-2 Oct 1962.

ACCESSION NR: AT4025433

S/0000/62/000/000/0027/0040

AUTHORS: Varshavskiy, V. I.; Semenova, T. N.

TITLE: Learning program for recognition of configurations

SOURCE: Nauchno-tehnicheskoye obshchestvo radiotekhniki i elektronnye radiovyazi. Nauchno-tehnicheskaya konferentsiya. 16th, Leningrad, 1961. Kibernetika i elektronno-vychislitel'naya tekhnika (Cybernetics and electronic computer technology); materialy* konferentsii. Moscow, Gosenergoizdat, 1962, 27-40

TOPIC TAGS: algorithm, reading machine, convex function, set theory, automaton, pattern recognition modeling

ABSTRACT: A mathematical formulation of the character-recognition problem for automatic reading machines is presented. Particular attention is paid to the case when the set of possible input configuration is not fully specified prior to construction of the

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ACCESSION NR: AT4025433

recognizing automaton, but is formed during its operation. This raises the question of constructing an automaton which develops during the course of its operation the law governing the transformation of coordinates in such a way that the sets corresponding to different images, in the transformed space have nonintersecting convex shells. The mathematical investigation is based on results obtained by the authors earlier on the possibility of separating the subsets of the vertices of unit n-dimensional hypercubes. (DAN, v. 139, No. 5 and No. 6). The set of permissible configuration is broken up into two nonintersecting subsets, called the images of the configurations and the problem then consists of constructing some function which assumes two different values for two different images. An algorithm was developed for the problem and tested with the "Ural-1" computer. Some shortcomings of the proposed algorithm have been disclosed and means for their elimination are described. Orig. art. has: 4 figures and 10 formulas.

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"APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5

ACCESSION NR: AT4025433

ASSOCIATION: None

SUBMITTED: 01Sep62 DATE ACQ: 07Apr64 ENCL: 00

SUB CODE: DP, MA NR REF SOV: 005 OTHER: 000

Card 3/3

APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5"

VARSHAVSKIY, V.I.

Some problems concerning the theory of logical nets using threshold elements. Vop. teor. mat. mash. no.2:52-106 '62. (MIRA 15:8)
(Electric networks) (Switching theory) (Electric relays)

VARSHAVSKIY, V.I.

Mathematical theory of neuronal networks. Prim. mat. metod.
v biol. no.2:60-66 '63. (MIRA 16:11)

S/103/63/024/003/006/015
D405/D301

AUTHORS: Varshavskiy, V.I. and Vorontsova, I.P. (Leningrad)

TITLE: On the behavior of stochastic automata of variable structure

PERIODICAL: Avtomatika i telemekhanika, v. 24, no. 3, 1965,
353-360

TEXT: The behavior of stochastic automata is considered which constitute a natural extension of the concept of a finite automaton. This paper is related to two earlier works by M.L. Tsetlin, who introduced the notion of useful behavior of an automaton. The results of this paper were presented jointly by the authors and M.L. Tsetlin at the session of the General Meeting of the Division of Biological Sciences of the Academy of Sciences, SSSR, devoted to the biological aspects of cybernetics (April 1962). An attempt is described at constructing a mathematical model which forms a structure ensuring useful behavior during the experiment itself; the behavior of the model is studied in comparison to finite automata whose struc-

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D405/D301

On the behavior ...

ture remains unchanged during the experiment. It was found that:
1) Stochastic automata whose structure is formed during their operation have useful behavior in random media; 2) In stationary random media the behavior of such automata is optimal; 3) A stochastic automaton forms its structure in a random medium by approximating an automaton with linear tactics; for a sufficient number of initial states the average number of fines (i.e. when the input variable $x_1 = 1$) for a stochastic automaton of variable structure coincides (in the limit) with the mean of the fines for a finite automaton with linear tactics and optimal number of states. The system medium-automaton is described by a homogeneous Markov chain. The formulas for the mean are derived. Some illustrative examples are given. An analytic study of the behavior of stochastic automata of variable structure in non-stationary random media is difficult mathematically. Yet many results can be obtained with the help of an analog computer. Various such experiments were conducted and the results plotted. The process of structure formation of a stochastic automaton can be regarded as a method of synthesis of a finite automaton by a given performance criterion. There are 5 figures.

SUBMITTED: July 9, 1962

Card. 2/2

"APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5

VARSHAVSKIY, V.I. (Leningrad); ROZENBLYUM, L.Ya. (Leningrad)

Minimization of pyramidal networks consisting of majority components. Izv. AN SSSR. Tekh. kib. no.3:24-29 Je '64.
(MIRA 17:10)

APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5"

UDC 511'.722.2'015.85:530.1'515.85

Vishnayak, M. I. (Leningrad)

UDC 511'.722.2'015.85:530.1'515.85

forms

Transl. from *Voprosy Kibernetiki*, no. 6, 1964, p. 102.

TOPIC TAGS: Boolean algebra; disjunctive normal form; three-valued ternary system

ABSTRACT: Based on the topological method of R. H. Urbano and R. K. A. Mueller (Trans. IRE, Publ. Co., 1962, p. 102), a new algorithm has been developed for finding the disjunctive normal form of a Boolean function in a three-valued ternary system. The algorithm is based on the concept of a topological space.

UDC 511'.722.2'015.85:530.1'515.85
UDC 511'.722.2'015.85:530.1'515.85

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and $P_{12} = P_{13} = P_{23} = 0$

whereas the different variables T and N have been shown to be considered as AND variables.

The suggested modification is intended to reduce the number of terms in the function, since it permits the essential simplification of ternary logical functions represented as products of sums. It is also intended to facilitate the minimizing of ternary logical functions.

CONFIDENTIALITY CLASSIFICATION

ASSOCIATION:

CLASSIFIED BY: M. J. H.

DATE: 10/10/95

L 44760-65

ACCESSION NR: AP5007247

S/0280/65/000/001/0028/0033

AUTHOR: Vashavskiy, V. I. (Leningrad); Rozenblyum, L. Ya. (Leningrad)

TITLE: Synthesizing pyramidal circuits from majority elements

SC: Electronics; Technology; Tekhnika i radioelektronika i kibernetika, no. 1, 1965, 28-33

ABSTRACT: A pyramidal circuit

ABSTRACT: The expansion formula for any function of the algebra of logic suggested by R. Linderman and M. Cohn (IRE Trans., EC-10, 1961, no. 1) does not always hold in all cases. It cannot be used, for example, when the original function contains terms of the type $x_1 \oplus x_2 \oplus \dots \oplus x_n$.

The article suggests a method for determining when the original function can be expanded in terms of the functions $x_1 \oplus x_2 \oplus \dots \oplus x_n$. The method is based on the fact that the function can be expanded if and only if it is a sum of functions of the type $x_1 \oplus x_2 \oplus \dots \oplus x_n$.

ABSTRACT: none

SUBMITTED: 02 Nov 63

ENCL: 00

SUB CODE: DP, MA

NO REF Sov: 000

OTHER: 901

B50
Card 1/1

"APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5

VARSHAVSKIY, V.I.; MELESHTINA, N.V.; TSERTLIN, M.I.

Automata behavior in periodical random media and the synchronization
problem in the presence of noise. Probl. pered. inform. 1 no.1:65-71
'65. (MIRA 18:7)

APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5"

"APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5

VARSHAVSKIY, V.I. (Leningrad)

Functional divisibility of three-valued logic. Izv. AN SSSR.
Tekh. kib. no.2:43-46 Mr-Ap '65. (MIRA 18:7)

APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001858710006-5"

VARSHAVSKIY, V.I. (Leningrad); ROZENBLYUM, L.Ya. (Leningrad)

Functional divisibility in majority networks. Izv. AN SSSR.
Tekh. kib. no.4:60-64 Jl-Ag '65. (MIRA 18:11)

ACCESSION NR: AP4036510

S/0103/64/025/005/0673/0684

AUTHOR: Varshavskiy, V. I. (Leningrad)

TITLE: Ternary majority logic

SOURCE: Avtomatika i telemekhanika, v. 25, no. 5, 1964, 673-684

TOPIC TAGS: logic, ternary logic, tristable conditions, parametron, majority logic

ABSTRACT: A tristable parametron (with detuned circuit) can be used for realizing this ternary majority function:

$$x\Delta y\Delta z = \begin{cases} +1, & \text{if } x+y+z > +1, \\ 0, & \text{if } x+y+z = 0, \\ -1, & \text{if } x+y+z < -1. \end{cases}$$

By changing input poles, a diametrical negation $\bar{x} = -x$ can be realized. These two operations are sufficient (proof supplied) for constructing any ternary-logic function or any ternary truth table. Pyramidal schemes are synthesized. Three

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ACCESSION NR: AP4036510

types of ternary decoders as well as the use of ternary elements (parametrons, transistor and tunnel-diode schemes) in binary circuits are briefly considered. "In conclusion, the author wishes to thank S. V. Yablonskiy and M. L. Tsetlin who persuaded the author to refrain from publishing the first version of the article, N. G. Boldy*rev for his attention to the work and valuable advice, and also I. N. Bogolyubov and B. L. Ovsiyevich who perused the manuscript and advanced a number of useful comments and whose work in developing tristable parametron schemes greatly stimulated this article." Orig. art. has: 5 figures and 60 formulas.

ASSOCIATION: none

SUBMITTED: 11Mar63 DATE ACQ: 03Jun64 ENCL: 00

SUB CODE: DP, CP NO REF SOV: 001 OTHER: 001

Card 2/2

L 7947-66 EMT(d)/T IJP(c)

ACC NR: AP5023124

SOURCE CODE: UR/0103/65/026/009/1639/1643

44, 55

AUTHOR: Varshavskiy, V. I. (Leningrad)

ORG: none

TITLE: Majority decomposition

SOURCE: Avtomatika i telemekhanika, v. 26, no. 9, 1965, 1639-1643

16, 44, 55

TOPIC TAGS: logical circuit, majority function

ABSTRACT: The methods for synthesizing logical circuits that realize a majority function have been based on a successive elimination of variables (e.g., the S. B. Akers method, AIEE, S-141, 1963); these methods necessitate the application of input signals to all stages of the circuit which makes the corresponding physical circuit cumbersome. The present article investigates the possibility of synthesizing such majority-element circuits in which all or most elements carry

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UDC: 62-507

L 7947-66

ACC NR: AP5023124

only
out logical functions while the variables are applied to the input stages of the circuit. A condition of existence of a simple majority decomposition is formulated as a set of Boolean equations. The logical function of k variables is represented as a majority function of three logical functions of the $(k-1)$ -th variable. The method does not guarantee against nonoptimal solutions. "In conclusion, the author wishes to thank L. Ya. ~~Rozenblum~~ for a perusal of the manuscript."
Orig. art. has: 2 figures, 7 formulas, and 5 tables.

3

SUB CODE: 09 / SUBM DATE: 12Dec64 / ORIG REF: 001 / OTH REF: 003

GC

Card 2/2